

January 29, 2003

**EX PARTE – Via Electronic Filing**

Ms. Marlene Dortch  
Secretary  
Federal Communications Commission  
The Portals  
445 12th Street, S.W.  
Washington, DC 20554

Re: CC Docket Nos. 01-338, 96-98, and 98-147

Dear Ms. Dortch:

Attached for inclusion in the record of this proceeding is a letter to Chairman Powell and the commissioners addressing SBC's submission of January 14, 2003 which showed significant and sustained cost differentials between ILECs and CLECs providing service to the mass market. The letter refers to a detailed, analytical study of that SBC submission, which is also attached.

In accordance with FCC rule 1.49(f), this *ex parte* letter and attachments are being filed electronically pursuant to FCC Rule 1.1206(b)(1).

Sincerely,

/s/

Christopher J. Wright  
*Counsel Z-Tel Communications, Inc.*

cc:	Chris Libertelli	Tom Navin
	Matt Brill	Rob Tanner
	Jordan Goldstein	Jeremy Miller
	Dan Gonzalez	Brent Olson
	Lisa Zaina	Bill Maher
	Michelle Carey	Jeff Carlisle



601 South Harbour  
Island Boulevard  
Suite 220  
Tampa, FL 33602  
www.z-tel.com

January 29, 2003

**Ex Parte**

Honorable Michael K. Powell  
Chairman  
Honorable Kathleen Q. Abernathy  
Honorable Michael J. Copps  
Honorable Kevin J. Martin  
Honorable Jonathan S. Adelstein  
Commissioners  
Federal Communications Commission  
445 12th Street, S.W., Room 8-B201  
Washington, DC 20554

Re: SBC study showing that CLECs are impaired in providing analog mass-market voice services without access to unbundled local switching and transport, CC Docket Nos. 01-338, 96-98, and 98-147

Dear Chairman Powell and Commissioners:

In a detailed *ex parte* filing dated January 14, 2003, SBC Communications, Inc. proved that CLECs are impaired in providing analog mass-market services without access to unbundled local switching and transport (i.e., UNE-P). SBC's pleading documents *significant, substantial, and sustained cost differentials* between ILECs and CLECs providing service to the mass market. This filing is the only meaningful empirical evidence in the record that purportedly supports the removal of unbundled switching or shared transport, and it instead clearly and convincingly proves impairment. As a result, the Commission is legally required to preserve unbundled switching and shared transport under Section 251 of the Telecommunications Act.

Z-Tel has prepared the attached analysis of SBC's "best-case" estimates of the cost disparity between UNE-L and UNE-P modes of entry. This analysis shows the dramatic impact a forced migration from UNE-P to UNE-L would have on analog dialtone competition. According to SBC's model, a competitor that builds its own switch and local transport network and procures unbundled loops from the ILEC would have costs nearly *twice* SBC's own network costs (as described by SBC in filings before the Commission).

The real-world implications of SBC's model are staggering. For example, in Texas, Z-Tel currently provides residential and small business service using UNE-P in 485 of SBC's 517 central offices. Utilizing the optimistic assumptions in SBC's model, if Z-Tel were required to migrate all of its residential and small business customers in Texas to UNE-L, Z-Tel's switching costs would increase more than 400% and its total network costs by over 140%. In addition, Z-Tel's average total monthly cost per line in Texas would far exceed the monthly revenue per line that SBC assumes a UNE-L entrant can profitably serve. Thus, while SBC's model debates revenues and costs of hypothetical entrants, its ingredients present a recipe for a competitive and consumer disaster for *actual* entrants like Z-Tel and *actual* customers.<sup>1</sup>

The Commission cannot ignore the significant, substantial, and sustained cost-disparities between ILECs and CLECs. Indeed, in *USTA*, the D.C. Circuit plainly noted that “*any cognizable competitive ‘impairment’ would necessarily be traceable to some kind of disparity in cost.*”<sup>2</sup> While the SBC UNE-L Cost Model clearly presents a “best-case” scenario from the ILEC perspective, it admits to significant and substantial cost disparities that persist even for CLECs that have overcome initial start-up and scale costs. SBC shows that this remarkably well-established CLEC providing service as efficiently as possible would still face *long-run* costs 45% higher than what SBC claims its total costs to be (approximately \$46.32 per line per month for the CLEC, as opposed to \$31.84 for the ILEC). Moreover, this cost disparity would result *solely* from the denial of access to unbundled local switching and shared transport.

The attached study explains with logic and rigor what is in any event obvious to all but the most biased observer—these sustained higher costs substantially impair a CLEC's ability to compete. This is particularly true for analog residential and small business analog dialtone services, which are the services Z-Tel “seeks to provide” and which the Commission must therefore analyze under section 251(d)(2).

SBC's general response to these extreme cost disparities is to encourage CLECs to “cream-skim” and only compete for customers that generate revenues higher than the

---

<sup>1</sup> Moreover, basing a Commission decision upon a model of a hypothetical CLEC, which does not take into account differences qualifying small businesses like Z-Tel face, would violate the Regulatory Flexibility Act and Executive Order 13272. SBC's model assumes that all CLECs, regardless of size, face the same cost of capital (an unrealistic 12.19%) and have SG&A expenses at 20% of revenue, approximately the same SG&A expense ratio that large businesses like SBC have. Moreover, as the D.C. Circuit noted in *CompTel*, section 251(d)(2) “seems to invite an inquiry that is specific to particular carriers.” To be consistent with the Regulatory Flexibility Act, the Commission cannot treat all CLECs (large and small) alike and force CLECs like Z-Tel to make the same capital investment in local switching and transport networks that it may consider imposing on large firms such as AT&T and MCI. To comply with the law, the Commission must consider “impairment” separately for qualifying small business CLECs. Such sensitivity to the requirements of the Regulatory Flexibility Act has been noticeably absent from all ILEC advocacy in this proceeding to date.

<sup>2</sup> As we demonstrated previously in Z-Tel's Reply Comments, the D.C. Circuit's observations in *USTA* are properly implemented by adopting an impairment standard that focuses on whether a competitor's output would be reduced if its costs were raised without access to a network element.

inefficient \$46.32/month average total cost SBC estimates for each analog UNE-L line. That argument misses several basic and critical concepts of competition.

First, engaging in the “cream-skimming” suggested by SBC would wall off a large portion of total access lines from entry. Z-Tel’s flagship product, Z-LineHOME Unlimited, offers residential consumers a package of local, long-distance, and messaging services to residential consumers for \$49.99 per month. Z-Tel also offers residential consumers a budget package, Z-LineHOME Select, of local, messaging and some long-distance service for \$29.99 to \$39.99 per month. Clearly, increasing Z-Tel’s costs as SBC proposes would make both of those products impossible to offer. Z-Tel does not (and does not desire to) “cream-skim” as SBC recommends, and simply asking Z-Tel to raise its price for this service ignores the competitive reality that customers are sensitive to price.<sup>3</sup> Z-Tel is a price taker, not a price maker in the local exchange market. In SBC’s vision, competition for a considerable number of dialtone subscribers would simply die.

Second, the customer targeting necessary for this “cream-skimming” is difficult (and may be impossible) to do consistently and efficiently while competing for retail mass-market customers. As Z-Tel showed in its Opening Comments in this proceeding, access to the *entire* market is important to make mass-market advertising techniques (like radio, television, print, and outdoor) work efficiently. If Z-Tel can only serve perhaps half of its current customers that are likely to see an advertisement, that is no different than doubling Z-Tel’s cost of mass-market advertising.<sup>4</sup>

Third, SBC’s argument assumes that CLECs can effectively compete against the ILEC for these high-revenue customers despite their severe cost disadvantage imposed by the denial of unbundled access. That is not the case. Through their “Winback” tariffs and promotional programs, ILECs compete for higher-revenue customers by dropping prices dramatically and offering substantial discounts and perks if those customers return to the ILEC service. Under these Winback tariffs, the ILECs do not necessarily have to give all their customers these lower rates. In other words, the \$0-17 monthly “margin” SBC alleges that CLECs could still obtain even with higher UNE-L costs can be easily competed away by an ILEC that has far lower costs.<sup>5</sup>

---

<sup>3</sup> SBC is schizophrenic on the issue of cream-skimming. While SBC has criticized CLECs for being “cream skimmers” in numerous *ex parte* filings, *see* SBC *ex parte*, CC Docket Nos. 01-338, 96-98, and 98-147 (Oct. 11, 2002) (“SBC Provides Residential Universal Service While IXCs “Cherry Pick” Profits”), it now contends that the FCC should force CLECs, by dramatically increasing their costs, to aggressively skim the cream.

<sup>4</sup> Increasing the costs of advertising in this manner demonstrates that SBC’s assumption that a UNE-L CLEC could operate with SG&A costs (20% of revenues) similar to other entrants to be pure fantasy. If a CLEC’s sales and advertising costs are 4x what they could be, the CLEC would have to be *substantially* more efficient than the ILEC in General and Administrative costs to match 20% SG&A. As shown in the attached analysis, actual switch-based CLEC SG&A ratios are far higher than the 20% of revenues SBC assumes.

<sup>5</sup> *See* Letter from Jay Bennett, SBC, to Marlene H. Dortch, Secretary, FCC, in CC Docket No.s 01-338, 96-98, and 98-147 (Jan. 24, 2002), Attachment at 8. Consider how competition for a \$60 per month would play out if a CLEC had costs of \$47/month and an ILEC costs of \$32/month. With a Winback

The attached paper also shows that SBC's UNE-L Cost Study provides significant evidence that SBC's local switching and transport networks have "natural monopoly" characteristics. The Commission must consider these natural monopoly characteristics in deciding whether to order unbundled access to those local switching and transport networks is warranted. The *USTA* court discussed in detail its view that unbundling would be appropriate for natural monopoly network elements. The D.C. Circuit noted that in such cases, there would be wasteful duplication of those assets:

The classic case where competitor duplication would make no economic sense is where average costs are declining throughout the range of the relevant market. . . . In such a case, duplication, even by the most efficient competitors imaginable, would only lead to higher costs for all firms, and thus for customers.<sup>6</sup>

SBC's UNE-L Cost Model confirms that this is the case here. As demonstrated in the attached analysis, under SBC's UNE-L Cost Study, a CLEC with significant scale, a fully-loaded switch, and an optimized local transport network still faces a *persistent and significant* cost disparity with the ILEC of 40%.<sup>7</sup> There is, correspondingly, the potential for about \$15 per month of "wasteful duplication" of local switching and transport networks for dialtone customer served by UNE-L, even when the CLEC is as large and efficient as SBC suggests.

The Commission cannot blind itself to the consequences of this evidence. SBC's model shows declining costs of local switching and transport over the entire extent of the market. The *USTA* court criticized the Commission's *UNE Remand Order* because the Commission did not consider and discuss natural monopoly characteristics.<sup>8</sup> While the *USTA* court's critique of the Commission in that case was based upon its view that the Commission considered *all* cost disparities (regardless of their source), the Commission's response to *USTA* cannot be to *ignore* this evidence this time around.

---

program, the ILEC will be able to offer service to the customer for \$46.99/month and still generate a margin of 46%. The CLEC would have a margin of zero. In short, because of the cost disparity between the CLEC and the ILEC, the CLEC could not provide the service it seeks to offer. The CLEC could do so with UNE-P, where the prices would be more commensurate with the ILEC's costs.

<sup>6</sup> *United States Telecom Ass'n. v. FCC*, 290 F.3d 415, 426 (D.C. Cir. 2002).

<sup>7</sup> The assumptions made by SBC about this CLEC address the D.C. Circuit's observation in *USTA* that the Commission should not consider "disparities faced by virtually any new entrant in any sector of the economy . . ." *USTA*, 290 F.3d at 426. Indeed, the cost disparities at issue here arise directly from the fact that even the efficient CLEC with the substantial customer base assumed by SBC would still have local switching and transport costs nearly twice that of the ILEC. That result indicates "the presence of economies of scale 'over the entire extent of the market.'" *Id.*

<sup>8</sup> The *USTA* court clearly stated that one of the key benefits of unbundling was in "eliminating the need for separate construction of facilities where such construction would be wasteful." *Id.*

Based upon history, it is not surprising that the ILEC local switching and transport networks would demonstrate characteristics of natural monopoly. The importance of interconnection and access to these local networks dates back to the 1913 Kingsbury Commitment, which imposed interconnection and “equal access” type policies upon the Bell System.<sup>9</sup> The U.S. Government even nationalized and oversaw the consolidation of competitive companies into one monolithic system during World War I.<sup>10</sup>

Thereafter, as the Supreme Court observed, until the 1996 Act, “[s]tates typically granted [each ILEC] an exclusive franchise in each local service area.”<sup>11</sup> With these state-granted and state-guaranteed monopolies, the ILECs were able to finance the construction of ubiquitous local switching and transport networks that took full advantage of the strong network effects that the local networks possess. As the Supreme Court recently observed in *Verizon*:

It is easy to see why a company that owns a local exchange . . . would have an *almost insurmountable competitive advantage* not only in routing calls within the exchange, but, through its control of this local market, in the markets for terminal equipment and long-distance calling as well.<sup>12</sup>

The task of “routing calls within the exchange” specifically noted by the Supreme Court is, in essence, the functionality provided by the local switching and shared transport network elements. Courts and commentators have long-recognized the “extensive and complicated . . . local distribution facilities” of the local telephone network as setting this industry apart from many other sectors of the economy.<sup>13</sup> One need not even consider the

---

<sup>9</sup> See *Report of the Attorney General*, 1914 at 14 (requiring that Bell System local exchanges “will make connections with all long distance interstate lines and thereby preserve competition in interstate communications”).

<sup>10</sup> GPO, *Government Control and Operation of Telegraph, Telephone and Marine Cable Systems, August 1, 1918 to July 31, 1919* (1921) (describing consolidation of rival exchanges during World War I while the network was nationalized by the Postmaster General).

<sup>11</sup> *AT&T Corp. v. Iowa Utils. Bd.*, 525 U.S. 366, 371 (1999).

<sup>12</sup> *Verizon Communications, Inc. v. FCC*, 122 S. Ct. 1646, 1662 (2002) (footnoted omitted and emphasis added).

<sup>13</sup> *Fishman v. Estate of Wirtz*, 807 F.2d 520, 540 (7<sup>th</sup> Cir. 1986) (“[n]ot every essential facility need be as extensive and complicated as the local distribution facilities of AT&T’s operating companies”); see, e.g., *Cyber Promotions, Inc. v. America Online, Inc.*, 948 F. Supp. 456, 463 (E.D. 1996) (distinguishing local telephone network from e-mail service); Elizabeth A. Nowicki, *Competition in the Local Telecommunications Market: Legislate or Litigate?*, 9 Harv. J.L. & Tech 353, 365 & n.57 (1996) (“[t]he bottleneck situation . . . usually arises in technical and capital-intensive industries such as the telecommunications or electricity transmission”); Paul L. Joskow and Roger G. Noll, *The Bell Doctrine: Applications in Telecommunications, Electricity, and Other Network Industries*, 51 Stan. L. Rev. 1249 (1999); William F. Baxter, *Conditions Creating Antitrust Concerns with Vertical Integration by Regulated Industries – “For Whom the Bell Doctrine Tolls,”* 52 Antitrust L.J. 243 (1983).

local telephone network to be a “natural monopoly” to recognize that it is appropriate to consider as unique “structures, plants or other valuable productive assets that were created as part of a regulatory regime, whether or not they are properly natural monopolies” as unique.<sup>14</sup> As Professors Areeda and Hovenkamp note, given that the local network was paid for by ratepayers who for decades guaranteed the operator its return, “whether or not local ‘hard wired’ telephone service is at best delivered by a monopoly, it would be unwise to allow that monopoly to obstruct free competition” in other related services.<sup>15</sup> A principal purpose of the 1996 Act – and unbundling in particular – was to break down the barriers to entry that exist due to nearly a century of state-sanctioned local telephone monopoly.

SBC’s UNE-L Cost Model shows that the “almost insurmountable competitive advantage” in “routing calls within the exchange” described by the Supreme Court persists. This cost disadvantage is fatal when it comes to competing for analog dialtone customers. SBC’s submission ratifies the filings of competitors like Z-Tel showing that these persistent cost disparities that are not shared by “virtually any new entrant,” and showing that the local switching and transport networks still contain significant natural monopoly characteristics. This evidence is confirmed by the rampant bankruptcies, liquidations, and corporate retrenchments of entrants that tried to implement this “self-provided switching” strategy for analog dialtone lines.<sup>16</sup> Clearly, UNE-L has largely been a failure as a mass-market entry strategy and it would be arbitrary and capricious for the Commission to order all CLEC’s to migrate to UNE-L at this time.

If the FCC chooses to compel a forced march from unbundled switching to UNE-L, the harm to consumers and the economy would be devastating. Many analog dialtone customers would *immediately* lose access to innovative and less-expensive services from CLECs. Prices would increase. Competitors like Z-Tel would be forced to spend money wastefully duplicating the ILEC switching and shared transport plant solely to compete for the residual high-end customers. Given the small size of the “high-end” of the

---

<sup>14</sup> Herbert Hovenkamp, *Federal Antitrust Policy: The Law of Competition and Its Practice* sec. 7.7, at 274 (2d ed. 1994).

<sup>15</sup> Phillip Areeda and Herbert Hovenkamp, 3A Antitrust Law.2d para. 772, at 175 (2002).

<sup>16</sup> Z-Tel reiterates here once again – as it has repeatedly since initial comments – that the requirements for serving analog dialtone residential and small business customers are substantially different than serving business customers with digital, data communications needs. The Commission has made this “business market”/“mass-market” distinction in the *UNE Remand Order* and Bell company merger proceedings and Z-Tel strongly believes that the “granular” analysis required by *USTA* and *CompTel* mandates different impairment analyses for these different markets. The economic and operational issues related to deployment of switches to serve broadband business customers are substantially different than the economic and operational issues associated with providing analog dialtone service. The Act (and *CompTel*) mandates that when examining the extent of “self-provided switching,” it cannot consider the presence of CLEC switches deployed to serve large businesses with broadband service. And under the service and CLEC-specific requirements of *CompTel*, the Commission cannot consider the presence of wireless or cable telephony services in its section 251(d)(2) impairment analysis, because not every CLEC owns a wireless network or cable company.

residential market, there may not be sufficient margins to cover the fixed and sunk costs associated with entry. Thus, driving CLECs into the high-end of the market will no doubt drive some or all of the CLECs out of the market.

The 1996 Act was not about taking away consumer choices and forcing entrants to tithe wasteful capital investment to satisfy the regulator. Rather, the Act was about giving consumers more choices and giving entrants the ability to enter the market in the manner companies enter most markets every day—by buying capacity from already-established firms. This is how competition began for long-distance service and that is how companies enter that market still today. Hopefully, the Commission will see SBC's filing for what it is – unequivocal proof of economic impairment – and it will do as the Act requires by reaffirming unbundled access to local switching and shared transport.

Respectfully submitted,

/s/

Thomas M. Koutsky

George S. Ford

Jeffrey K. Lanning

Attachment



## The UNE-Platform, Impairment and Natural Monopoly: Bell Company Estimates of Cost Disparities and Their Consequences

George S. Ford, Ph.D., *Chief Economist, Z-Tel Communications Inc., Tampa, Florida.*

### I. Introduction

The 1996 Telecommunications Act provides for three entry modes for competitive local exchange carriers ("CLECs"): 1) facilities-based entry; 2) resale of the incumbent local exchange carrier's retail services; and 3) unbundled network elements leased from the ILEC. To date, the most successful form of entry for residential and small business analog dialtone customers is through the use of unbundled network elements.<sup>1</sup> Two forms of unbundled element entry often associated with the competitive provision of analog dialtone services are referred to as UNE-Loop (or UNE-L) and UNE-Platform (or UNE-P). The former entry mode (UNE-L) describes a CLEC's entry that combines unbundled loops procured from the ILEC with the CLEC's own switching and transport network. The latter, UNE-P, describes the situation in which the CLEC purchases a combination of unbundled loops with unbundled switching and transport from the ILEC. Whether and to what extent CLECs can readily "self-provide" switching and transport – and therefore compete economically for analog dialtone customers through the UNE-L entry strategy – is a critical component of the FCC's decision whether to require ILECs to continue to provide unbundled access to their switching and transport networks.

The UNE-P combination is currently the fastest-growing method of CLEC entry. Industry data indicates that UNE-P is used primarily to provide residential and small business consumers analog dialtone service, and that UNE-P has significant and substantial penetration in the most rural areas.<sup>2</sup> This success of

---

<sup>1</sup> According to FCC data as of June 2002, there were about 7.33 million UNE-P lines, 3.87 million UNE-L lines, and 2.92 million resold lines. It is now estimated that there are over 10 million UNE-P lines. PACE Coalition, *UNE-P Fact Report* (Jan. 2003).

<sup>2</sup> See, e.g., Letter from Brian J. Benison, SBC, to Marlene H. Dortch, Secretary, FCC, CC Docket Nos. 01-338, 96-98 and 98-147 (Oct. 30, 2002) ("SBC 10/30/02 *ex parte*"); Letter from W.W. (White) Jordan, BellSouth, to Marlene H. Dortch, Secretary, FCC, CC Dockets Nos. 01-338, 96-98, and 98-147 (Nov. 19, 2002); Letter from Cronan O'Connell, Qwest, to Marlene H. Dortch, Secretary, FCC, CC Docket Nos. 01-338, 96-98, and 98-147 (Oct. 21, 2002); Letter from Ann D. Berkowitz,

UNE-P may be attributed to the fact that by providing unbundled access to local switching and transport networks, it allows CLECs to overcome what the Supreme Court called “an almost insurmountable competitive advantage” that ILECs have in “routing calls within the exchange.”<sup>3</sup> A recent study demonstrates that competition from UNE-P has produced meaningful price reductions in local telecommunications markets for mass-market consumers.<sup>4</sup>

UNE-L entry requires the CLEC to construct (“self-provide”) local switching and transport networks. UNE-L is primarily used to serve businesses requiring at least a DS1 level of capacity (the digital equivalent of 24 analog dialtone circuits).<sup>5</sup> Digital DS1 (or “T1”) functionality provides a considerably different level of service to these customers, which are mostly medium and large businesses. Moreover, UNE-L entry to date has been focused upon urban areas; evidence shows that UNE-L entry is virtually nonexistent outside of the largest wire centers.<sup>6</sup>

The continued availability of unbundled switching and transport (core components of UNE-P) is being considered as part of the FCC’s Triennial Review, CC Docket No. 01-338. In that proceeding, the FCC must examine whether “the failure to provide access to [a] network element[] would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer.”<sup>7</sup> Efforts to eliminate UNE-P, led by the Regional Bell Companies, have focused on requiring CLECs to migrate from UNE-P to UNE-L, which would make those CLECs provide their own switching and transport networks. CLECs are opposed to such a transition, arguing that the costs of UNE-L prohibit successful entry in the telecommunications mass market. CLECs also point to the considerable legal problems with eliminating UNE-P; section

---

Verizon, to Marlene H. Dortch, Secretary, FCC, CC Dockets Nos. 01-338, 96-98, 98-147 (Oct. 29, 2002).

<sup>3</sup> *Verizon Communications, Inc. v. FCC*, 122 S. Ct. 1646, 1662 (2002). The *Verizon* court provides a useful description of the physical nature of these local exchange networks, *id.* at 1661-62.

<sup>4</sup> Lee L. Selwyn and Susan M. Gately, *Business Telecom Customers Benefit from UNE-P-Based Competition* at 5-6 (Dec. 2002) (listing ILEC competitive response to UNE-P entry).

<sup>5</sup> PACE Coalition, *UNE-P Fact Report* (Jan. 2003).

<sup>6</sup> Comments of UNE-P Coalition, CC Docket Nos. 01-338, 96-98, and 98-147 at 11 (April 5, 2002) (citing Texas statewide UNE-P penetration); Reply Comments of UNE-P Coalition, CC Docket Nos. 01-338, 96-98, and 98-147 at 9 (July 17, 2002) (citing Georgia statewide UNE-P penetration).

<sup>7</sup> 47 U.S.C. 251(d)(2).

271 of the Act explicitly requires the Bells to provide unbundled switching and transport.

An important component of this debate is the cost disparities between the UNE-P and UNE-L methods of entry, including the ILEC's own cost of serving customers. For the FCC to give full meaning to Section 251(d)(2), it must consider whether those cost disparities would "impair" the ability of a CLEC to provide the services it seeks to offer. The D.C. Circuit Court of Appeals has noted that "any cognizable competitive 'impairment' would necessarily be traceable to some kind of disparity in cost."<sup>8</sup> Because the UNE-L method of entry requires CLECs to construct their own switching and transport networks, the cost to do so therefore must factor in the FCC's analysis as to whether UNE-L is a credible substitute for UNE-P entry.

This paper evaluates a recent quantification of such costs by SBC Communications (an ILEC). SBC's UNE-L Cost Model, along with SBC's prior filings in this proceeding, provide some insight into the network cost disparities the FCC would impose on CLECs by forcing them to abandon the UNE-P strategy and build local switching and transport networks (UNE-L). Sections II-IV of this paper attempt to trace SBC's estimated network cost disparities forward to a reliable index of a CLEC's ability to provide service – the quantity of service provided. Using SBC's cost calculations, migrating from UNE-P to UNE-L would increase the network costs of a CLEC by about 65-75%; in some markets, however, costs would increase far more. In Texas, for example, Z-Tel's network costs would increase 141%.<sup>9</sup> Accordingly, based upon econometric estimates of output responses to cost changes, a forced transition from UNE-P to UNE-L can be expected to substantially curtail the ability of CLECs to provide mass-market services, probably to zero.

Section V of this paper also analyzes the implications of SBC's UNE-L Cost Model for arguments that the ILEC local switching and transport networks exhibit "natural monopoly" characteristics. The UNE-L Cost Model analyzes the average total cost of a CLEC that seeks to build its own switch and local transport network. SBC's model shows that these average total costs are substantially higher than what SBC claims its own costs to be – \$49.58 per month per line versus \$35.96 per month per line (in non-urban markets). The model

---

<sup>8</sup> *United States Telecom Ass'n. V. FCC*, 290 F.3d 415, 426 (D.C. Cir. 2002).

<sup>9</sup> Importantly, the cost disparities presented in this paper are based on SBC's cost model, not our own. Our use of these estimated cost disparities does not represent an acceptance of SBC's model as a reasonable means by which to estimate these cost disparities.

indicates that these economies of scale are present throughout the relevant range of industry output, a condition of natural monopoly. The *USTA* court noted that analyses of a “link” between cost disparities and characteristics of natural monopoly would support an FCC decision to unbundle.<sup>10</sup> This paper shows that SBC’s model indeed provides such a link.

## II. Cost Disparities and Impairment

Firms with higher costs than their competitors have fewer customers: that is what economic theory advises regardless of industry structure.<sup>11</sup> This fact served as the basis, no doubt, for the *USTA* court’s conclusion that impairment is “necessarily” traceable to disparities in costs. The more competitive is a market, the more sensitive is a firm’s output to its costs and the costs of its competitors.<sup>12</sup> The inevitable consequence of price competition is the elimination of high cost firms from the industry. Indeed, eliminating inefficient suppliers so that industry output is produced most efficiently is one of the desirable properties of competition.

This same principle holds true in various forms of competition. With perfect competition, where price is equal to marginal cost, any cost disadvantage would reduce the disadvantaged firm’s output to zero.<sup>13</sup> The same is true for Bertrand competition (i.e., competition in prices) when goods are perfect substitutes and the low-cost firm can supply the entire industry output.<sup>14</sup> Products and services,

---

<sup>10</sup> *USTA*, 290 F.3d at 427.

<sup>11</sup> J. Tirole, *The Theory of Industrial Organization* (1995), Ch. 3.

<sup>12</sup> This merciless reality of competitive markets is observed in the aggressive efforts of firms – Wal-Mart, for example – to acquire even a trivial cost advantage relative their rivals. Without doubt, the economic incentive for the ILEC to cut price in response to CLEC entry is strong, and experience proves out this incentive. For example, SBC, along with other ILECs, operates an aggressive winback campaign in many states in its region that target price cuts to high-revenue customers that currently purchase service from CLECs. SBC’s aggressive price cuts have attracted the attention of state regulators, who, in some cases, have had to force SBC to exercise some restraint for fear of eliminating competitive entry altogether (i.e., a Bertrand Paradox). See, e.g., *Project No. 24948 - Investigation of Winback/Retention Offers by Chapter 58*, Texas Public Service Commission (Oct. 2002) and Indiana Utilities Regulatory Commission Cause No. 42218 (Aug. 2002). For a description of the Bertrand Paradox, see Tirole (1995), *supra* note 11 at Ch. 5.

<sup>13</sup> *Verizon*, slip op. at 33 (“In a perfectly competitive market, retail prices drop instantly to the marginal cost of the most efficient company.”).

<sup>14</sup> The Bertrand model of price competition hypothesizes that rivals choose their prices simultaneously and noncooperatively to maximize profit, taking the output prices set by their competitors as given. When the output of Bertrand firms is homogeneous (perfect substitutes), each

of course, can be differentiated to varying degrees, and differentiation loosens the relationship between cost disparities and output. Also, many economic models contemplate forms of competition other than competition in prices (e.g., Cournot competition in quantities). In some alternative specifications of competitive interactions, higher cost firms may survive in equilibrium. However, it is *always* the case, even with perfect collusion, that higher cost firms produce less output than their low cost rivals. The relevant question for the FCC's Section 251(d)(2) analysis is whether those cost differences affect an entrant's ability to provide service (e.g., output).

As the D.C. Circuit noted, impairment in Section 251(d)(2) is "necessarily" tied to cost disparities. Section 251(d)(2), by forcing the FCC to focus upon whether denial of access to a network element like switching "would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer," places the analysis squarely into an examination of whether a CLEC's output (market share) would be affected by denial of access.<sup>15</sup>

The statutory impairment analysis thus requires the Commission to compare the "service provided" in two states of the world – one with and one without access to a network element. *With* access to a network element, a CLEC can (be expected to) provide a certain quantity of service; *without* access to the element the CLEC provides some other quantity of service. If the quantity of service provided without the element is less than the quantity of service provided with the element (presumably by some "material" amount), then the CLEC is impaired in its ability to provide service without the unbundled element. Therefore, in assessing impairment, the Commission should consider what is the expected effect on the quantity of service provided by a CLEC (which serves as an index of its "ability to provide service") if access to an unbundled element is

---

firm has an incentive to undercut its rival's price and capture the entire market. As a result, Bertrand competition results in an equilibrium where output price equals marginal cost with only two firms. Tirole (1995), *supra* note 11, Ch. 5. It is important to note that today the ILEC has the capacity to serve the entire market – indeed, that is precisely what the ILEC local telephone network was designed to do.

<sup>15</sup> In *CompTel v. FCC*, No. 00-1272 (D.C. Cir. 2002), slip op. at 4, the court noted that section 251(d)(2) "seems to invite an inquiry that is *specific to particular carriers and services*" (emphasis added). A detailed legal and economic analysis of the Section 251(d)(2) impairment standard is provided in R. B. Ekelund Jr., T. R. Beard, and G.S. Ford, *Pursuing Competition in Local Telephony: The Law and Economics of Unbundling and Impairment*, Auburn University Manuscript (Nov. 2002) and in the Reply Testimony of George S. Ford on Behalf of Z-Tel Communications, CC Docket No. 01-338 (July 17, 2002).

curtailed. Since quantity (output) changes are nearly always traceable to some cost change or disadvantage, measuring cost disadvantages is a reasonable focal point for an impairment analysis.

Two approaches can plausibly trace cost disparities to impairment: a) economic theory and b) empirical evidence. Between theoretical and empirical evidence, the latter provides a far more reliable indicator of expected responses to cost disparities since such measures, by definition, are based the statistical analysis of observed output responses to actual cost changes. Fortunately, a number of econometric studies, some published in academic journals, provide estimates of CLEC output responses to changes in incremental costs.<sup>16</sup> Using these estimated output-cost elasticities, the effect of the higher costs alleged by SBC that would result from a forced transition from UNE-P to UNE-L can be predicted. In other words, by using these elasticities and SBC's cost disparity data, we can predict the effect such disparities would have on CLEC output and, consequently, directly quantify CLEC impairment.

### III. SBC's UNE-L Cost Model and Network Costs

On January 14, 2003, SBC Communications (an ILEC) submitted its own cost study of UNE-L in an *ex parte* submission to the Federal Communications Commission ("FCC"). This study evaluates the cost of a CLEC using UNE-L (rather than UNE-P) to serve the mass market. SBC computes the costs for a CLEC with 250 or 500 customers in a central office located in a non-urban density zone.<sup>17</sup> Since this model purports to analyze only the cost of providing service in suburban and rural areas, and since nearly half of SBC's central offices have a total number of lines of 5,000 or less, SBC's cost model assumes that this hypothetical CLEC would achieve market shares of no less than 5-10% in those

---

<sup>16</sup> A. D. Kline, "The Demand for Unbundled Elements in Telephony Revisited," 31 *Atlantic Economic Journal* (Mar. 2003); R. B. Ekelund Jr. and G.S. Ford, "Preliminary Estimates of the Demand for Unbundled Elements in Telephony," 30 *Atlantic Economic Journal* (Dec. 2002); R. B. Ekelund Jr., T. R. Beard, and G.S. Ford, *Pursuing Competition in Local Telephony: The Law and Economics of Unbundling and Impairment*, Auburn University Manuscript (Nov. 2002); T.R. Beard and G. S. Ford, *Make-or-Buy? Unbundled Elements as Substitutes for Competitive Facilities in the Local Exchange Network*, Phoenix Center Policy Paper No. 14 (Sep. 2002).

<sup>17</sup> The relevance to estimated cost the density zone selection is, for the most part, limited to the unbundled loop rate. SBC uses weights of 44% suburban and 56% rural to compute an average loop rate. For Texas, SBC computes transport costs using the rural prices for transport elements. Neither Michigan nor California deaveraged rates for the DS1 transport elements.

towns and counties.<sup>18</sup> In Texas, a CLEC with 250-500 lines in each central office would have a market penetration of approximately 125,000 to 250,000 lines; to provide nationwide service commensurate with Z-Tel's current geographic reach of approximately 4800 central offices, SBC's hypothetical CLEC would have to have 1.2-2.4 million analog dialtone lines on fully-loaded switches and optimized transport networks. SBC's hypothetical, switch-based CLEC has clearly achieved operational scale, so SBC's model excludes from consideration start-up cost disparities faced by "virtually any new entrant in any sector of the economy."<sup>19</sup>

While there are a number of debatable assumptions and methods in the SBC UNE-L cost model, we make no adjustments to the model's algorithms and core assumptions in this analysis; the estimated cost disparities are taken as given.<sup>20</sup>

Even if one regards SBC's submission as an optimistic assessment of the lower bound for UNE-L costs, the SBC study admits to *significant, substantial and sustained* cost differentials between UNE-L entry, UNE-P entry, and SBC's own

---

<sup>18</sup> For central offices with 5,000 lines or less, the least CLEC market share could be at 500 lines is 10%. Given that the most-current FCC data estimates the entire CLEC industry has having a market share of only 7.8% of residential and small business switched access lines, SBC's assumption that any CLEC can achieve 5-10% market share seems overstated. See Industry Analysis and Technology Division, Wireline Competition Bureau, FCC, *Local Telephone Competition: Status as of June 30, 2002* (Dec. 9, 2002).

<sup>19</sup> USTA, 290 F.3d at 426.

<sup>20</sup> For example, in New York and New Jersey the TELRIC rate for a hot-cut ranges from \$150-185. See *Review of Unbundled Network Elements, Rates, Terms, and Conditions of Bell Atlantic New Jersey, Inc.*, Docket No. TO00060356, Decision and Order (N.J. Bd. Pub. Util. rel. Mar. 6, 2002), Attachment (approving \$159.76-184.82 hot cut rate); *Proceeding on Motion of the Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements*, No. 98-C-1357, Order on Unbundled Network Element Rates (N.Y. Dept. Pub. Serv. Jan. 28, 2002). These rates are similar to rates recently proposed by SBC in UNE rate cases in its region. Verizon has subsequently voluntarily reduced these rates to \$35, but only for a limited period of time (until March 1, 2004), and Verizon continues to maintain that the higher rates are the TELRIC rates. See Application by Verizon New Jersey Inc., *et al.* for Authorization to Provide In-Region, InterLATA Services in New Jersey, WC Docket No. 02-67, *Memorandum Opinion and Order*, FCC 02-189 (rel. June 24, 2002) at paras. 61-68. Replacing this hot-cut rate with the \$50 rate assumed in the SBC cost model increases average CLEC costs by about \$7 per month. In addition, SBC assumes the CLEC's cost of capital is 12.19%, which is plainly understated. Assuming a CLEC cost of capital of 25% increases the per-line capital cost of the CLEC by over 50% (in the SBC Cost Model). Further, SBC understates capital costs by about 10% using the spreadsheet PMT function rather than a capital charge factor. In addition, SBC estimates that this hypothetical switch-based CLEC has SG&A expenses of 20% of revenues. The SG&A of *actual* switch-based CLECs (Time Warner, Focal, KMC, Choice One, and Allegiance) are higher, typically equal to about 33-58% of revenues. RCN, a CLEC that is nearly entirely facilities-based, has SG&A expenses equal to about 80% of revenues and, in some quarters, has SG&A expenses exceeding 100% of revenues.

costs of providing service.<sup>21</sup> The large cost disparities estimated by SBC are critical to policies regarding the availability of unbundled elements and the prospects for the maintenance and continued growth of competition in telecommunications markets.

1. NETWORK COST DISPARITIES ESTIMATED BY SBC'S UNE-L COST MODEL FOR A HYPOTHETICAL SWITCH-BASED CLEC

SBC's model estimates the network costs for an established, UNE-L CLEC serving a customer base of either 250 or 500 customers in a non-urban central office. The CLEC's transport network is efficiently sized to its customer base in each central office and its overhead expenses are consistent with that of an established firm.<sup>22</sup> The CLEC is assumed to have a sufficient number of total customers (across central offices) to operate its switch at capacity. Consequently, the network costs disparities estimated by SBC are not those experienced "by virtually any new entrant" and the cost estimates themselves are appropriately described as the long-run incremental costs of a switch-based CLEC that has achieved scale of operating a switch at full capacity with 250/500 lines in several central offices in an area. SBC computes these long-run incremental costs for three states: California, Michigan, and Texas. Total CLEC costs include the cost of the loop, the cost of self-supplied switching and transport, wholesale long distance costs, and SG&A. SBC assumes wholesale long distance costs are \$5 on average per line and SG&A is 20% of revenues, but neither of these cost figures is derived from the model itself. Given the structure of the model, the estimated costs can be used to compute cost disparities for an efficient firm of considerable scale, rather than a new entrant inefficiently using its network.

For purposes of Section III-IV of this paper, we focus upon the "network cost" differentials, the cost of the loop and switching and do not consider the other costs examined in the model. A transition from UNE-P to UNE-L requires the replacement of unbundled switching and transport with self-supplied substitutes for those elements. The CLEC continues to purchase the unbundled loop. Thus, the cost change between UNE-P and UNE-L is exclusively related to the network cost disparity between leasing unbundled switching/transport and

---

<sup>21</sup> SBC has the incentive to understate UNE-L costs to make the entry option appear more attractive for policy makers.

<sup>22</sup> Overhead costs in the SBC model are assumed to be a constant 20% of revenue, which is roughly equal to SBC's overhead costs as reported in the SBC 10/30/02 Ex Parte. As set forth in note 20 *supra*, facilities-based CLECs have SG&A expenses ranging from 33% to over 100% of revenues.



self-supplying their alternatives. SBC provides sufficient detail in its UNE-L Cost Model to measure this network cost differential. It is also easy to adjust SBC's model to compute network costs on a statewide average basis, rather than the "44% Suburban, 56% Rural" benchmark assumption of the model, and we do so.<sup>23</sup>

Table 1 summarizes the average costs of the loop and the switching/transport components of UNE-P and UNE-L for the three states evaluated in SBC's model.<sup>24</sup> Estimates of network costs for both SBC's Suburban/Rural benchmark scenario and the statewide average alternative scenario are provided. The results are nearly identical between scenarios with respect to the cost of CLEC-supplied switching and transport. Also included are SBC's estimates of its *own* network costs for providing service to a switched access line, utilizing the method employed by SBC in an October 30, 2002 *ex parte* filing. SBC included in its own network costs \$9 in "Plant and Network Operations Expense" and the capital costs for SBC's investment in switched access lines (including a 11.25% return on investment).<sup>25</sup>

---

<sup>23</sup> Many unbundled network elements are priced based upon geographic density zones, usually three. Typically, element rates are lower in higher-density, urban zones. An adjustment is instructive because UNE-P entry tends to be statewide. The 10/30/02 Ex Parte filed by SBC shows that throughout its 12-state BOC region, UNE-P entry was spread nearly equally among urban, suburban, and rural density zones.

<sup>24</sup> The costs for switching are computed as total network costs minus the cost of the loop. Any loop-related costs required only when the CLEC provides its own switching (non-recurring charges and cross connects) are included in switching costs, since those costs are incremental to the decision to self-supply switching.

<sup>25</sup> SBC 10/30/02 Ex Parte. SBC claims that its investment per line is \$499. Capital expenses are estimated using a capital charge factor of 0.15, which is based on the investment weighted-average capital charge from the FCC's Hybrid Proxy Cost Model using an 11.25% cost of capital (which was assumed by SBC). The sum of the \$9 operational expense and \$6.24 carrying charge was multiplied by 1.27, which is the ratio of the loop cost used in the SBC UNE-L Cost Model to the statewide average loop cost. This 27% adjustment is made to convert SBC's average costs to the costs of serving the suburban and rural density zones (which is consistent with their UNE-L Cost Model).

**Table 1. SBC Network Cost Estimates**

	Loop	Switching	Loop + Switching	With Long Distance, SG&A Expenses***
<i>SBC Benchmark Case (44% Suburban, 56% Rural)</i>				
UNE-L	\$14.48	\$18.50	\$32.98	\$49.58
UNE-P	\$14.48	\$5.46*	\$19.94	\$36.54
SBC's Own Cost	...	...	\$19.36	\$35.96
<i>Statewide Average</i>				
UNE-L	\$11.40*	\$18.32	\$29.72	\$46.32
UNE-P	\$11.40*	\$5.46*	\$16.86	\$33.46
SBC's Own Cost	...	...	\$15.24**	\$31.84

\* Commerce Capital Markets, *The Status of 271 and UNE-Platform in the Regional Bells' Territories* (November 2002)

\*\* SBC Ex Parte, CC Docket No. 01-338 (Oct. 30, 2002).

\*\*\* Includes \$11.60 for SG&A and \$5 for long distance costs (as assumed in SBC's UNE-L Cost Model).

Supporting calculations provided in Attachment A.

A number of important points are illustrated in Table 1. First, replacing unbundled switching with its self-supplied alternative substantially increases the cost of switching for the CLEC. In the three states for which SBC's cost model computes UNE-L costs, the average price for unbundled switching (including transport) is \$5.46 per line/month.<sup>26</sup> For SBC's Benchmark case, self-supply of unbundled switching/transport increases the cost of the element to \$18.50 per line/month – a 238% increase in cost (\$18.50 versus \$5.46). On a statewide average basis, the switching/transport costs for the UNE-L CLEC are \$18.32, nearly identical to the benchmark case. Switching and transport costs per line increase by 236% (\$18.32 versus \$5.46).

Second, for the combination of loops and switching, the self-supply of switching raises the CLECs' costs by 65% (\$32.98 versus \$19.94) relative to UNE-P in the benchmark scenario. On a statewide average basis, UNE-L has network costs of \$29.72, which exceed UNE-P costs by 75% (\$29.72 versus \$16.86).

<sup>26</sup> Commerce Capital Markets, *The Status of 271 and UNE-Platform in the Regional Bells' Territories* (Nov. 2002). For these three states, Z-Tel's average switching/transport costs is consistent with that estimated by Commerce Capital Markets. For other states, there are substantial discrepancies between actual UNE-P costs and those estimated by Commerce Capital Markets. See T. R. Beard and C. Klein, *Bell Companies as Profitable Wholesale Firms: The Economic Implications of UNE-P*, Phoenix Center Policy Paper No. 17 (Nov. 2002).

Third, for both the benchmark and statewide average scenarios, the network cost of UNE-P is roughly equivalent to what SBC's estimates to be its own costs of providing service (\$19.94 versus \$19.36 in the benchmark scenario).<sup>27</sup>

The difference between UNE-P, UNE-L and SBC's network costs have a significant impact upon the competitive dynamic and are discussed in Section IV below. Even under SBC's highly optimistic UNE-L Cost Model, the transition from UNE-P to UNE-L places this hypothetical switch-based CLEC at a 65-75% cost disadvantage relative to its primary competitor, SBC.

What is not revealed in the table is that the cost disadvantages are not driven by the cost of the switch itself, but the costs related to connecting the unbundled loop to the CLEC switch (cross connects, collocation, and transport). Indeed, SBC assumes the cost of switching for the CLEC is \$4.05 in Texas – which is about 25% less than the cost of unbundled switching (excluding transport) in the state. SBC's assumption that the CLEC switch is fully utilized (which may not be true in a particular CLEC's experience) illustrates the fact that it is not necessarily switching itself that causes impairment, but the costs related to connecting loops to switching plant. Even if the CLEC could acquire switching for free its switch-related costs increase by 158% relative to unbundled switching and its (network) cost disadvantage vis-à-vis the ILEC is nearly 70%. Impairment in relation to unbundled switching and transport, then, can be a consequence of factors other than switching itself, as the SBC model proves.

Table 1 illustrates a cost disparity between UNE-P and UNE-L of approximately \$13 per line/month. In a recent filing, WorldCom claims that the cost disparity calculated from the SBC cost model is only \$6.86.<sup>28</sup> WorldCom's analysis, however, focuses solely on those cost components of collocation, transport, and switching, and their analysis excludes all costs related to cross-connects and hot cuts. These latter costs are plainly incremental to a transition from UNE-P to UNE-L, and should be included as part of the cost disparity. Further, the WorldCom filing compares the switching costs of a CLEC using UNE-L to the average unbundled switching rate for all states (\$6.44). Unbundled switching in California, Michigan, and Texas average to only \$5.46. As a result, WorldCom has overstated unbundled switching costs by about \$1.00 (or 18%).

---

<sup>27</sup> The difference in the UNE-P and SBC costs on a statewide average basis is due to the above average costs in Texas. SBC rates in Texas are currently under review by the Texas Commission.

<sup>28</sup> Letter from Gil Strobel, Lawler, Metzger & Milkman, to Marlene Dortch, Secretary, FCC, CC Docket Nos. 01-338, 96-98, and 98-147 (Jan. 27, 2003).

## 2. SBC'S COST MODEL AND Z-TEL'S CUSTOMER BASE

While computing costs based on general assumptions about the customer base of a hypothetical switch-based CLEC can provide some insights, using the SBC cost model to estimate the network cost of UNE-L for an actual CLEC customer base provides more interesting and relevant results. To this end, the SBC cost model is used to compute the UNE-L network costs for the customer base of Z-Tel Communications, Inc. ("Z-Tel"). We note, importantly, that Z-Tel's own costs of converting its base would not coincide with the estimates of the SBC cost model. Nevertheless, the SBC model provides a useful starting point since it is based on an optimistic, lower-bound estimate of such network costs.

Z-Tel has been providing local service to residential customers in Texas since 1999. All of these lines are provisioned by means of the UNE-P. Z-Tel owns or operates no local switches. In September 2002, Z-Tel's customer base in Texas was 22,584 analog dialtone lines, which makes it one of the state's largest CLECs serving analog dialtone customers. These dialtone customers are located in 495 central offices throughout Texas. Not all of these customers are in the suburban and rural density zones (as assumed in SBC's model), so statewide average rates for unbundled loops and transport facilities are used. The statewide average rates are lower than the rural rates, so this adjustment will actually reduce the estimated cost disadvantage Z-Tel would face if it were required to transition all of these customers to UNE-L.

To account for the difference in customers between Z-Tel's actual customer base and the assumptions of the SBC model, the inputs of the SBC model are used to extrapolate "Z-Tel specific" inputs. Based on the SBC model, the cost of a switch is assumed to be about \$2.6 million.<sup>29</sup> Switch support investment is equal to 0.30 of switch investment (as in the SBC model), and monthly support is assumed to equal 1.08 per line capacity of the switch. Based on SBC's assumptions: a) non-recurring charges for collocation space equal \$7,526 plus \$10 per line; b) monthly recurring collocation costs are \$530 plus \$0.05 per line; and c) GR303 investment is assumed to be \$17,300 plus \$15.78 per line.<sup>30</sup> Loop costs and

---

<sup>29</sup> SBC indicates that the switch investment for 16,128 customers would be \$2,160,485 and for 32,256 customers \$3,115,036. The per-line incremental cost between the two switches is \$59.

<sup>30</sup> These network costs are computed by comparing the increase in costs between 250 and 500 lines, and dividing the costs into fixed and per-line components. These cost calculations are conservative, since they ignore the lumpiness of the investments and expenditures.

transport costs are based on the density zone shares of Z-Tel in Texas, and are computed in the same manner as in SBC's model.<sup>31</sup>

**Table 2. SBC's UNE-L Network Cost Model Applied to Z-Tel's Texas Customer Base**

	UNE-P	UNE-L	Difference	Percent Difference
Loop Cost	\$14.22	\$14.22	\$0.00	0.00%
Switching Cost	\$6.05	\$34.61	\$28.26	472%
Loop + Switching	\$20.27	\$48.83	\$28.56	141%
Long Distance, SG&A*	\$16.60	\$16.60	\$0.00	0.00%
Total	\$36.87	\$65.43	\$28.56	77%

\* SBC UNE-L Cost Model.

Network costs per line are computed for each central office and the average is computed across all customers. The estimated costs are summarized in Table 2. If Z-Tel were to migrate its customer base from UNE-P to UNE-L, its average switching costs would rise 472% to \$34.61 from the current average of \$6.05 per line. For the combination of the loop and switching elements, costs rise 141% to \$48.83 per line/month. These network costs (alone) place Z-Tel at a 220% cost disadvantage relative to SBC (\$48.83 versus \$15.24). Including SBC's assumed wholesale long distance costs of \$5 and SG&A expenses of \$11.60 (0.258), Z-Tel's average total cost per line are estimated to be \$65.43 [=48.83 + 11.6 + 5] for its customer base in Texas if the base were provisioned over UNE-L. This average total cost *exceeds* SBC's assumed revenues of \$58 per line by over 13% and implies an *105% cost disadvantage* relative to SBC's average total cost per line (\$65.43 relative to \$31.84).<sup>32</sup>

For every central office in which Z-Tel has customers, the cost of providing switching and transport is *no less than three times* that of the price of unbundled local switching and transport. Across all central offices, the minimum cost increase for moving from UNE-P to UNE-L is 246% ( $\$20.92 / \$6.05 - 1$ ). As discussed in Section IV below, this 246% or more increase in the cost of switching has important implications for Z-Tel's ability to provide service. Moreover, there are additional competitive consequences of applying the assumptions of SBC's hypothetical model to Z-Tel's Texas situation. As discussed above, SBC assumes that a hypothetical switch-based CLEC can still profitably serve high-revenue (\$58 per line) customers. But approximately three-quarters of Z-Tel's actual

<sup>31</sup> For most offices, only one DS1 transport facility is required.

<sup>32</sup> The SBC average total cost figure includes the \$15.24 in network costs plus SG&A of \$11.60 and long distance costs of \$5 (see Table 1)

customers in Texas have average revenues per month *lower* than that figure. If Z-Tel were adjust its business plan accordingly (as suggested by SBC) and only offer service in central offices with average revenues of \$58/month or higher, Z-Tel would, in effect, reduce the geographic availability of its service by approximately 75%.

#### IV. Tracing Network Cost Disparities to Impairment

With estimated cost disparities in hand, some means by which to translate those disparities into expected output changes is needed to directly assess impairment. Econometrically estimated responses of CLEC output to cost changes are ideally suited for this task. Elasticity estimates can be used to analyze the significance of increasing a firm's costs upon that firm's output. This section applies a range of elasticity estimates to the network cost increases that would be imposed on UNE-P CLECs if they were required to self-provide switching and transport networks using the UNE-L strategy. These estimates show that increasing CLEC network costs in this manner would destroy the level of competition for analog, dialtone services that currently exists. These elasticity estimates predict that as a result of these network cost increases, a "transition" from UNE-P to UNE-L will not occur; instead, CLECs will simply exit this market.

A number of econometric studies have estimated the relationship of the quantity of service provided end-users by CLECs to the incremental cost of providing service to those end-users.<sup>33</sup> The studies provide either output-cost elasticities for loop and switching costs independently, or the elasticity with respect to the costs of the combination of the two elements. The output elasticity is defined as the percentage change in CLEC output given a percentage change in incremental cost.<sup>34</sup> The elasticities are summarized in Table 3.

As summarized in the table, Beard and Ford (2002) and Beard, et al (2002) estimate output-cost elasticities of about -1.7 for loops and about -1.0 for switching (including transport). These elasticities indicate that for a 10% increase in the cost of loops or switching, CLEC output is reduced by 17% or 10%, respectively. Ekelund and Ford (2002) and Kline (2003) find output-cost

---

<sup>33</sup> *Supra* note 16.

<sup>34</sup> The incremental cost of an unbundled element to the CLEC is the price to the ILEC. Thus, the output-cost elasticity for the CLEC is the own-price elasticity of demand for the ILEC.

elasticities of  $-2.7$  and  $-1.8$  for the combination of loops and switching elements.<sup>35</sup> Thus, a 10% increase in network cost reduces (on average) the quantity of CLEC lines by 18% or more.

**Table 3. Econometrically Estimated Output-Cost Elasticities**

Study	Loop Elasticity	Switching Elasticity	Loop/Switching Elasticity
Ekelund and Ford (2002)	...	...	-2.70
Kline (2003)	...	...	-1.83
Beard and Ford (2002)	-1.65	-1.12	...
Beard, et al (2002)	-1.76	-1.00	...

\* Elasticities measures the percentage change in total CLEC quantity of UNE-P lines to a percent change in the price of the unbundled element.

All of the studies that estimate econometrically the relationship of CLEC output to cost (measured by UNE prices) find an elastic response, implying that CLEC output is highly sensitive to cost changes. Given the elastic response of CLEC output to network costs, the extremely large cost disparities estimated by SBC's UNE-L Cost Model plainly imply impairment with respect to unbundled switching. For example, given the econometrically estimated output-cost elasticity for unbundled switching of about  $-1.0$ , SBC's estimated cost penalty of about 230% for a transition to UNE-L from UNE-P can be expected to reduce CLEC output to zero.<sup>36</sup> Reducing CLEC output to zero is, of course, powerful evidence of impairment.

SBC's estimated cost disparities for the combination of loops and switching imply dramatic reductions in CLEC output. Whether measured relative to the cost of unbundled elements (UNE-P = \$19.94/16.86) or SBC's own network cost of (\$19.86/15.24), the 70-95% network cost disparity caused by the transition from UNE-P to UNE-L is expected to reduce CLEC output by 125% or more. In other words, the CLEC is expelled from the market because of the network cost disparities estimated by SBC. The network cost disparities computed for Z-Tel (Table 2) exceed those of the hypothetical CLEC of SBC's model, so the expected reduction in output for Z-Tel Communications also would force Z-Tel to exit the market, assuming Z-Tel's response is consistent with that of all CLECs.

Given the estimated output-cost elasticities available and SBC's own estimates of the network cost disparities between UNE-L, UNE-P, and its own network costs

<sup>35</sup> Kline (2003) could not reject the hypothesis that the estimated output-cost elasticity was equal to  $-2.7$ , as estimated by Ekelund and Ford (2002).

<sup>36</sup> Interpreting the output effect using point estimates of elasticities when cost changes are so large is subject to the normal caveats.

(all of which are on record in CC Docket No. 01-338), it is impossible to conclude that there is no impairment with respect to unbundled switching. Without unbundled switching, it appears that the CLEC has no ability to provide the service it seeks to offer.

## V. Average Total Cost Disparities, Wasteful Duplication, and Natural Monopoly

SBC's UNE-L Cost Model also admits to significant average total cost disparities between SBC and CLECs that choose to build their own switching and transport networks to serve these markets. This result seemingly ratifies the Supreme Court's observation that the ILEC has "an almost insurmountable competitive advantage" in "routing calls within the exchange."<sup>37</sup> The model also shows that local switching and transport networks have natural monopoly characteristics. This evidence affirms the opinion of Alfred Kahn, who concluded, "it seems clear that [local exchange service] is a natural monopoly."<sup>38</sup>

"Natural monopoly" characteristics of the local switching and transport network are to be assessed by the FCC in its review. In *USTA*, the D.C. Circuit implied that impairment can also be assessed by whether or not duplication of the element is "wasteful," implying that the element is provided under conditions of natural monopoly:

Of course any cognizable competitive "impairment" would necessarily be traceable to some kind of disparity in cost. Indeed, the ILECs argued before the Commission and the Supreme Court that Congress intended that the impairment standard embody the criteria of the "essential facilities" doctrine [] which itself turns on concepts of cost. The doctrine's basic idea is that where one firm controls some facility (such as a bridge) that is essential for competition in a broader market, and it would make no economic sense for competitors to duplicate the facility, and certain other criteria are satisfied, the owner may be compelled to share the facility with its competitors. The classic case where competitor duplication would make no economic sense is where average costs are declining throughout the range of the relevant market. In such a case, duplication, even by the most efficient competitors imaginable, would only lead to higher unit costs for all firms, and thus for customers. ... Without a link to this sort of cost disparity, there is no

---

<sup>37</sup> *Verizon*, 122 S. Ct. at 1662.

<sup>38</sup> 2 Kahn at 123.



particular reason to think that the element is one for which multiple, competitive supply is unsuitable.<sup>39</sup>

SBC's UNE-L Cost Model provides such a link between these cost disparities and natural monopoly characteristics.

As observed by the court, a natural monopoly exists when "output can be produced more cheaply by a single firm than by two or more firms."<sup>40</sup> This is the textbook definition of a natural monopoly.<sup>41</sup> Economies of scale need not exist throughout the entire extent of the market for this situation to occur; natural monopoly exists so long as a single firm can produce the industry output at lowest costs.<sup>42</sup>

Stated somewhat differently, Alfred Kahn observes that natural monopoly exists

... as long as plants constructed for higher levels of output will have lower average costs than smaller plants, or where it will cost less for an existing supplier to add a given amount of capacity to its existing plant than for a new supplier to provide it. ... [For example,] telephone companies may have to build larger or additional transmission, generating, or exchange capacities; but they will typically be able to do so at lower incremental costs than a competitor starting afresh.<sup>43</sup>

The output of SBC's UNE-L Cost Model – because it attempts to analyze the long-run incremental costs of a local telephone competitor – can be used to evaluate whether "plants constructed for higher levels of output will have lower average costs than smaller plants," and, consequently, determine the presence or absence of natural monopoly with respect to local exchange telecommunications services for mass market consumers.

---

<sup>39</sup> *USTA*, 290 F.3d at 426-27.

<sup>40</sup> D.L. Kaserman and J.W. Mayo, *Government and Business* (1995), Ch. 12. Natural monopoly does not preclude effective competition where technological innovation and government enforcement allows effective reduction of barriers to entry. See, e.g., W. J. Baumol, J. C. Panzar, and R. D. Willig, *Contestable Markets and the Theory of Industry Structure*, Rev. Edition (1988), Ch. 16 at 483 ("By isolating the activities with which the heavy sunk costs are associated, their damaging consequences can be quarantined").

<sup>41</sup> Kaserman and Mayo, Ch. 12.

<sup>42</sup> When a firm sells multiple products, natural monopoly is evaluated using the concept of cost subadditivity, which includes economies of scale and scope in its definition. See Baumol, et al, *supra* note 38.

<sup>43</sup> 2 A.E. Kahn, *The Economics of Regulation* 120 (1995).

SBC's model estimates the UNE-L costs for an *established* CLEC with a switch at full capacity that has at least 250 or 500 lines in every central office it serves. The CLEC's transport network is optimally sized to the customer base in each central office, the CLEC switch is operated at normal capacity, and the CLEC's overhead expenses are consistent with that of an established firm.<sup>44</sup> Consequently, the cost disparities estimated by SBC are not those experienced in the early stages of entry, and the cost estimates themselves are appropriately described as the long-run cost of providing service at the assumed level of demand. In other words, SBC's cost estimates lie on the long-run average cost curve of any firm that wishes to provide local exchange services.

SBC's model indicates that there are scale economies in the provision of local service through the relevant range of output. According to SBC *ex parte* filings, a local exchange carrier serving nearly 100% of the market can provision service at an average cost per month of about \$31.84 (see Table 1).<sup>45</sup> But, a local exchange carrier efficiently serving less than the full market (250 to 500 lines per a central office) would do so at an average cost of \$46.32, or \$14.47 more per line per month than one firm.<sup>46</sup> A CLEC serving about 22,500 lines in Texas (e.g., Z-Tel) does so with average cost of about \$65 per line, even if its switching and transport network are optimized for its customer base (using SBC's modeling assumptions).

SBC's model also gives an indication as to whether a CLEC's costs decrease with greater share. SBC examines the (improving) cost disparity between a CLEC that has 500 lines in an office as opposed to only 250 in an office, showing an improvement of up to 20% with this doubling of market penetration (9% on average).<sup>47</sup> As a result, for this analysis, the long-run average cost curve of

---

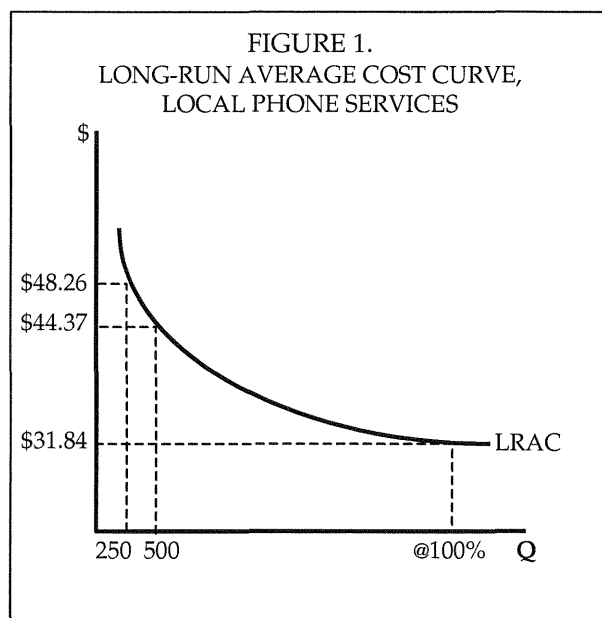
<sup>44</sup> Overhead costs in the SBC model are assumed to be a constant 20% of revenue (which is roughly equal to SBC's overhead costs); *but see supra* note 20 (showing that switch-based CLECs in fact do not have 20% overhead, or SG&A, ratios).

<sup>45</sup> Average cost estimates at 2.5% and 5% market share based on SBC's UNE-L Cost Model for 250 lines and 500 lines per central office.

<sup>46</sup> For this purpose, SBC's cost estimates of benchmark analysis is utilized. The state-wide average case, examined in Section III above, provides only marginally different results for this purpose.

<sup>47</sup> In Michigan, SBC estimates that the CLEC's network costs increase from \$26.92 at a 10% market share to \$32.43 for a 5% market share – a 20% increase in average cost.

serving the local exchange market is downward sloping.<sup>48</sup> The long-run average cost curve (for providing a bundled service offering) is depicted in Figure 1.



Because the long-run average cost curve for providing local exchange service is downward sloping, duplication of the local exchange network would be wasteful because it would raise the total cost of providing the output of the industry. The D.C. Circuit describes, in its *USTA* decision, wasteful duplication “lead[s] to higher unit costs for all firms.”<sup>49</sup> SBC estimates the UNE-L CLECs average total cost of serving a customer is \$13.62 per dialtone line per month higher than SBC’s own average total cost, or \$14.48 higher on a statewide average basis. Obviously, every customer acquired by a CLEC using UNE-L will increase the “unit costs for all firms.” If the ILEC has 100% of the market, then the industry average cost of serving customers is \$31.84 (on a statewide average basis); if the CLEC acquires a 10% market share, then the industry average cost of serving customers is \$33.29 ( $= 0.10 \cdot 46.32 + 0.90 \cdot 31.43$ ).<sup>50</sup> The average cost of service for

<sup>48</sup> It is impossible to know the exact shape of the curve, since we only have cost estimates for three points – the cost of serving 250 lines in a central office, the cost of serving 500 lines in a central office, and the cost of serving the entire market. But, SBC’s model and SBC’s estimates of its own costs clearly show declining average costs in the relevant range of output.

<sup>49</sup> *USTA*, 290 F.3d at 426.

<sup>50</sup> As the ILEC loses market share, its average cost will begin to rise.

the industry continues to increase as CLEC market share grows, indicating wasteful duplication of switching and transport plant.

Natural monopolies are not necessarily driven by supply-side considerations alone. Consumers vary in their expenditures on telecommunications services, with total bills ranging from a few dollars to a few thousand dollars. The distribution of expenditures cannot be ignored in an impairment analysis, either in terms of the effect of large cost disparities or the natural monopoly tendencies of the industry. As Alfred Kahn observed:

An additional source of [natural monopoly] is to be found not on the supply but on the demand side. ... [Demand variability] tends, other things being equal, to make it more efficient to supply many customers and regions than few; that is to say, it gives rise to economies of scale when the dimension along which output is measured is not the quantities taken by some given number of customers but the number and diversity of customers and markets served.<sup>51</sup>

The distribution and variability of demand, particularly when linked to large cost disparities, can have an important effect on a firm's ability to provide the service it seeks to offer.

Consider, for example, a CLEC that has an average cost of about \$50 per line (as estimated by SBC), representing a 40% cost disadvantage to its ILEC competitor. While it is true that some consumers spend more than \$50 per month on telecommunications services, this does not imply that a CLEC suffering such a large cost disparity is unimpaired. First, price competition (through the form of ILEC "Winback" tariffs that provide targeted price reductions to high-revenue customers that have switched to CLECs) should eliminate the high cost firm. Second, only about 10% of the local and 50% of local and long distance bills exceed \$50, which is what SBC estimates to be UNE-L average costs.<sup>52</sup> Even in the absence of price competition, increasing CLEC costs by forcing a transition to UNE-L closes off substantial parts of the market from CLECs, thereby reducing

---

<sup>51</sup> 2 Kahn at 122.

<sup>52</sup> Statistics based on an analysis of the Paragren Teletrend data (July, August, and September 1999; 6,420 observations). Expenditures are not adjusted because the current telecommunications consumer price index is roughly equal to its value in late 1999. From September 1999 to December 2002, the consumer price index for telecommunications services increased from 99.6 to 99.9 (less than 1%). The long distance component of the index fell from 96.8 to 82.6 while the local component rose from 169.8 to 198.2. See [www.economagic.com](http://www.economagic.com) for price index series.

entry.<sup>53</sup> Obviously, excluding large portions of the market from the reach of CLECs constitutes impairment on its face. Furthermore, the ability to achieve even the scale economies assumed in the SBC cost model (or any model for that matter) is questionable when the CLEC can only profitably serve small elements of the market. Furthermore, the ability to achieve even the scale economies assumed in the SBC cost model (or any model for that matter) is questionable when the CLEC can only profitably serve small elements of the market. Based on the distribution of expenditures in residential markets, a CLEC must penetrate the available market by two to ten times its overall market share to achieve the scale assumed by the SBC Cost Model.<sup>54</sup>

## VI. Conclusion

The maintenance and growth of competition in telecommunications mass markets depends critically on the availability of unbundled local switching, transport, and loops (i.e., UNE-P). A recent study by SBC Communications, an incumbent local exchange carrier, finds substantial cost disadvantages for CLECs that self-supply their own switching and transport networks: disadvantages of more than 200% of network costs in certain cases. The SBC study provides powerful evidence that combining unbundled loops with self-supplied switching and transport is not, today, a viable entry strategy. CLECs are plainly impaired in their ability to provide service without access to unbundled switching and transport.

The SBC study, when evaluated within the context of industrial economics, also suggests that the provision of local exchange service (via loops, switching, and transport) remains a natural monopoly. SBC's model shows that smaller firms, though efficient and established (at least, hypothetically), still experience sizeable cost disadvantages *vis-à-vis* the incumbent. Evidence presented here indicates that these disadvantages are exacerbated by the distribution of telecommunications demand.

In sum, SBC's new cost study, along with the analysis contained in this study, proves that the continued availability of unbundled switching and transport is

---

<sup>53</sup> When entry requires sunk costs, as it does in telecommunications, any reduction in market size reduces entry. See John Sutton, *Sunk Costs and Market Structure* (1991).

<sup>54</sup> For example, if a CLEC has an overall market share of 5%, but can only profitably serve 50% of the market, the CLEC must have a market share of 10% in the profitable segment of the market.

required both by section 251(d)(2) of the 1996 Act and for competition to flourish and grow in telecommunications mass markets. Without access to these elements, CLECs will be forced to abandon their current efforts to serve these markets.

## Attachment A. Supporting Calculations

<b>Table A-1. Supporting Calculations Benchmark</b>					
	CLEC Lines	UNE-L Network Costs	Loop Cost	Switching & Transport Costs	Unbundled Switching*
CA	250	35.71	15.96	19.75	5.44
CA	500	32.75	15.96	16.79	5.44
MI	250	32.43	10.86	21.57	4.59
MI	500	26.92	10.86	16.06	4.59
TX	250	36.65	16.63	20.02	6.36
TX	500	33.43	16.63	16.80	6.36
<b>Average</b>		<b>32.98</b>	<b>14.48</b>	<b>18.50</b>	<b>5.46</b>
* Commerce Capital Markets (Nov. 2002).					

<b>Table A-2. Supporting Calculations Statewide Average</b>					
	CLEC Lines	UNE-L Network Costs	Loop Cost	Switching & Transport Costs	Unbundled Switching*
CA	250	29.68	9.93	19.75	5.44
CA	500	26.72	9.93	16.79	5.44
MI	250	31.73	10.16	21.57	4.59
MI	500	26.22	10.16	16.06	4.59
TX	250	33.58	14.11	19.47	6.36
TX	500	30.36	14.11	16.25	6.36
<b>Average</b>		<b>29.72</b>	<b>11.40</b>	<b>18.32</b>	<b>5.46</b>
* Commerce Capital Markets (Nov. 2002).					